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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/307,988	05/10/1999	WILLIAM B. TELFAIR	IRV-104.1	5573

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NEIFELD IP LAW, PC
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EXAMINER
SHAY, DAVID M

ART UNIT	PAPER NUMBER
3739	

DATE MAILED: 09/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

3 mail

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DATE MAILED:

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☑ This application has been examined ☑ Responsive to communication filed on May 29, 2002 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), ____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☑ Notice of References Cited by Examiner, PTO-892.
2. ☐ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☐ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____.

Part II SUMMARY OF ACTION

1. ☑ Claims 61-89 are pending in the application.

   Of the above, claims _____ are withdrawn from consideration.

2. ☐ Claims _____ have been cancelled.

3. ☐ Claims _____ are allowed.

4. ☑ Claims 61-89 are rejected.

5. ☐ Claims _____ are objected to.

6. ☐ Claims _____ are subject to restriction or election requirement.

7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____. has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).

12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.

13. ☐ Since this application apppears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 61-67 and 69-89 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 61-89 are incomplete, because no step of surgery is recited. In claim 65 the term "said generating said pump beam pulse as a multi mode beam... said beam" lacks positive antecedent basis. Also, in claim 65 exactly what is intended to be encompassed by the term "a divergence greater than eight times the diffraction limit of said beam" is unclear because divergence as used in referring to beams of radiant energy is a quantity expressed in angular units, while the diffraction limit of such a beam is measured in units of length (e.g. nm), further since the beam is multimode, exactly what the diffraction limit of such a beam is unclear, since for a sufficiently large number of modes, the diffraction limit could theoretically be millimeters. For the purposes of examination, the term "divergence" will be read as "dimension" and the "diffraction limit" will considered to be that of a single mode TEM_{00} beam.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 61-63, 65-80, and 85-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Tang et al. Lin teaches performing corneal sculpting

with radiation in the 2.5-3.2 micron range generated by an OPO with pulse width in the 1-40 nsec range. Tang et al teach producing radiation in the range of Lin using a CPM KTP OPO pumped at about 1 micron, the pump thresholds are discussed as 0.5 mj corresponding to 30 kw peak power and 17 MW/cm2. To produce 0.5mj with a 30 kw pulse requires a pulse width of 17 nanoseconds to produce a power density of 17 MW/cm2 with 30Kw pulse yields (assuming a circular beam cross section) a beam radius of 562 microns which is well in excess of eight times the diffraction limit of the single mode beam. It would have been obvious to the artisan of ordinary skill to employ the OPO of Tang et al in the method of Lin, since this enables effective tuning in the desired range as taught by Tang et al; to employ a mirrors that transmits the pump pulse at a fourty five degree angle thereto since the does not manipulatively affect the method and is notorious in the art; to tune the output to be in the 2.75-3.0 micron range, since Lin gives no indication that this portion of Lin's range should be avoided, the claimed range is not critical, and wavelengths near 3 microns are notoriously useful for surgery, official notice of which is hereby taken; to increase the power of the pump beam by increasing the energy of the pump, since this would reduce the thermal damage to the non-linear material compared to increasing the pulse width official notice of which is hereby taken, and to transmit pump radiation exiting the crystal to a second KTP crystal and interlace the resulting idlers, since these are equivalents provide no unexpected result and are known configurations in the art , official notice of which are hereby taken thus producing a method such as claimed.

5. Claims 82 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Bosenberg et al. Lin teaches a method as claimed except for the particular non-linear material. Bosenberg et al teach generating wavelengths in the range desired by Lin using the non-linear material claimed. It would have been obvious to the artisan of ordinary skill to employ an OPO using the non-linear material of Bosenberg in the method of Lin since this can produce the desired wavelength is not critical provides no unexpected result, and dose not manipulatively effect the method, thus producing a method such as claimed.

6. Claims 83 and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Rines. Lin teaches a method as claimed except for the pump wavelength. Rines teaches using a Titanium Sapphire laser to pump KTP to produce midinfrared radiation in a NCPM OPO. It would have been obvious to use the of OPO of Rines in the method of Lin, since this is not critical, provides no unexpected result,and does not manipulativey affect the method, thus producing a method such as claimed.

7. Claim 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Bosenberg et al as applied to claim 82 above, and further in view of Mead et al.

8. Mead et al teach the equivalence of periodically poled LiNb03 for non-linear wavelength conversion. Thus it would have been obvious to the artisan of ordinary skill to employ periodically poled KTP in the method of Lin and Bosenberg et al, since this produces no manipulative effect and is a recognized equivalent to periodically poled LiNb03, as taught by Mead et al, thus producing a method such as claimed.

Any inquiry concerning this communication should be directed to David Shay

On the telephone number (703) 308-2215

David Shay:bhw

August 23, 2002

DAVID M. SHAY
PRIMARY EXAMINER
GROUP 330